

ABSTRACT

A method of manipulating a voxel object includes the steps of selecting a voxel grid having a plurality of voxels, representing a 3D object in a first voxel space representation using at least a portion of the plurality of the voxels, and converting the first representation into a second voxel space representation. The second representation is defined by a plurality of boundary voxels representing a border of the 3D object and is exclusive of outer voxels, such as a matrix of segments representation which includes a plurality of spaced apart parallel line segments. The line segments are preferably compressed by eliminating inner and empty voxels of the 3D object. Manipulation of the voxel object can include direct creation, editing and rendering of 3D graphics objects.